



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,630	01/13/2006	Pinhas Blau	1327MMG-US	3327
7590 10/04/2007			EXAMINER	
David Klein Dekel Patent Ltd. Beit HaRofim 18 Menuha VeNahala Street, Room 27 Rehovot, ISRAEL			CONNELLY CUSHWA, MICHELLE R	
			ART UNIT	PAPER NUMBER
			2874	
			MAIL DATE	DELIVERY MODE
			10/04/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/564,630	<b>Applicant(s)</b> BLAU ET AL.	
	<b>Examiner</b> Michelle R. Connelly-Cushwa	<b>Art Unit</b> 2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>1/13/06</u> | 6) <input type="checkbox"/> Other: ____  |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

The prior art documents submitted by applicant in the Information Disclosure Statement filed on January 13, 2006 have all been considered and made of record (note the attached copy of form PTO-1449).

### ***Drawings***

One (1) sheet of formal drawings were filed on January 13, 2006 and has been accepted by the Examiner.

### ***Specification***

Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**Claims 1-5 and 7-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Webjörn et al. ("Efficient quasi-phase-matched frequency doubling**

Art Unit: 2874

**of a high power, unpolarized fiber laser source", CLEO '98, page 76; cited by Applicant).**

Regarding claims 1, 2, 7, 8, 9; Webjörn et al. discloses a method and apparatus for frequency conversion of a non-polarized (unpolarized) optical light beam (the unpolarized light beam is emitted from the Fiber laser; see Figure 1), comprising:

- splitting a beam into two orthogonally polarized beams with a beam splitter (the calcite prism shown in Figure 1 is a beam displacing prism that splits the fiber laser output into two parallel, orthogonally polarized beams);
- forming said polarized beams and rotating their polarizations with beam forming optics (the  $\lambda/2$  waveplates); and
- pumping an optical frequency converter (periodically poled  $\text{LiNbO}_3$  (PPLN) waveguide) with the polarized beams.

Regarding claims 3, 10; Figure 1 of Webjörn et al. disclose an optical isolator placed in the beam path thereby preventing reflection-returned light from the wavelength converter from entering into the pump laser.

Regarding claims 4, 11; both beams are focused together in one spot within the frequency converter (see Figure 2) thereby generating one converted beam.

Regarding claims 5, 12; the frequency converter comprises a non-linear crystal (PPLN) placed within a cavity, and the common cavity is pumped by the polarized beams (see Figure 1).

**Claims 1, 2, 5-9, 12 and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Batchko et al. (US 2002/0179912 A1).**

Regarding claims 1, 2, 6-9 and 13; Batchko et al. discloses a method and apparatus for frequency conversion of a non-polarized optical light beam (see Figures 1A and 1B), comprising:

- splitting a beam into two orthogonally polarized beams with a beam splitter (13);
- forming said polarized beams and rotating their polarizations with beam forming optics ( $\lambda/2$  waveplate, 16);
- pumping an optical frequency converter (PPLN waveguide, 10) with the polarized beams; and
- combining the two generated polarized beams into one beam by means of a polarization beam combiner (13).

Regarding claims 5, 12; the frequency converter comprises a non-linear crystal (PPLN) placed within a cavity, and the common cavity is pumped by the polarized beams (see Figure 1).

### ***Conclusion***

Any inquiry concerning the merits of this communication should be directed to Examiner Michelle R. Connelly-Cushwa at telephone number (571) 272-2345. The examiner can normally be reached 9:00 AM to 7:00 PM, Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney B. Bovernick can be reached on (571) 272-2344. The fax phone

Art Unit: 2874

number for the organization where this application or proceeding is assigned is 571-  
273-8300.

Any inquiry of a general or clerical nature should be directed to the Technology  
Center 2800 receptionist at telephone number (571) 272-1562.

*Michelle R. Connelly-Cushwa*  
Michelle R. Connelly-Cushwa  
Patent Examiner  
September 27, 2007